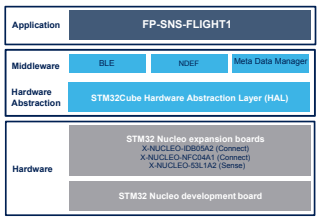
FP-SNS-FLIGHT1

Data brief

STM32Cube function pack for IoT node with NFC, BLE connectivity and time-of-flight sensors



STM32 Open Development Environment

STM32 Cube

Features

- Complete firmware to develop an IoT node with NFC, BLE connectivity and Time-of-Flight sensors
- Compatible with STBLESensor application for Android/iOS to perform distance data reading and firmware update (FOTA)
- Multi-target ranging sensor application based on the VL53L1 Time-of-Flight (ToF) sensor
- Sample implementation available for X-NUCLEO-NFC04A1 (optional), X-NUCLEO-53L1A2 and X-NUCLEO-IDB05A2 connected to a NUCLEO-F401RE or NUCLEO-L476RG
- Easy portability across different MCU families, thanks to STM32Cube
- Free, user-friendly license terms

Description

The FP-SNS-FLIGHT1 is an STM32Cube function pack which lets your IoT node connect to a smartphone via BLE and uses a suitable Android™ or iOS™ application like the STBLESensor app to view real-time object distance data read by the Time-of-Flight sensor.

The package also enables advanced functions, such as presence detection inside a fixed range distance.

If the X-NUCLEO-NFC04A1 expansion board is present, it uses the NDEF standard for simple and secure Bluetooth pairing, storing the necessary information on the NFC tag, thus simplifying the device configuration.

This package, together with the suggested combination of the STM32 and ST devices, can be used to develop wearable applications or smart thing applications in general.

The software runs on the STM32 microcontroller and includes all the necessary drivers to recognize the devices on the STM32 Nucleo development board.

Product summary	
STM32Cube function pack for IoT node with NFC, BLE connectivity and time-of-flight sensors	FP-SNS-FLIGHT1
Ranging sensor expansion board based on VL53L1	X-NUCLEO-53L1A2
Dynamic NFC/RFID tag IC expansion board	X-NUCLEO-NFC04A1
Bluetooth low energy expansion board based on the BlueNRG-M0 module	X-NUCLEO-IDB05A2
Applications	Bluetooth Low Energy

1 Detailed description

1.1 What can you do with STM32Cube function packs?

STM32Cube function packs leverage the modularity and interoperability of STM32 Nucleo and X-NUCLEO boards together with STM32Cube and X-CUBE software to create function examples for some of the most common use cases of different application technologies.

These software function packs are designed to exploit the underlying STM32 ODE hardware and software components as much as possible to best satisfy the requirements of final user applications.

Moreover, function packs may include additional libraries and frameworks that are not present in the original X-CUBE packages, thus enabling new functionalities allowing real and usable system for developers.

1.2 What is STM32Cube?

STM32Cube is a combination of a full set of PC software tools and embedded software blocks running on STM32 microcontrollers and microprocessors:

- STM32CubeMX configuration tool for any STM32 device; it generates initialization C code for Cortex-M cores and the Linux device tree source for Cortex-A cores
- STM32CubeIDE integrated development environment based on open-source solutions like Eclipse or the GNU C/C++ toolchain, including compilation reporting features and advanced debug features
- STM32CubeProgrammer programming tool that provides an easy-to-use and efficient environment for reading, writing and verifying devices and external memories via a wide variety of available communication media (JTAG, SWD, UART, USB DFU, I2C, SPI, CAN, etc.)
- STM32CubeMonitor family of tools (STM32CubeMonRF, STM32CubeMonUCPD, STM32CubeMonPwr) to help developers customize their applications in real-time
- STM32Cube MCU and MPU packages specific to each STM32 series with drivers (HAL, low-layer, etc.), middleware, and lots of example code used in a wide variety of real-world use cases
- STM32Cube expansion packages for application-oriented solutions

1.3 How does STM32 ODE function pack complement STM32Cube?

This software is based on the STM32CubeHAL. It extends STM32Cube by providing a board support package (BSP) for the BlueNRG-M0 module, dynamic NFC tag expansion boards, Time-of-Flight ranging expansion board and middleware components for communication with other Bluetooth devices and management of NDEF message format.

Revision history

Table 1. Document revision history

Date	Version	Changes
01-Mar-2016	1	Initial release.
05-Dec-2016	2	Updated title, cover image, Features, Description Added STM32 ODE compatibility.
20-Feb-2017	3	Updated cover page image and Features and Description sections. Updated section How does STM32 ODE Function Pack complement STM32Cube? Added X-NUCLEO-IKS01A2 expansion board compatibility information.
29-Mar-2017	4	Updated cover page image, features and description. Updated *How does STM32 ODE function pack complement STM32Cube?*
19-Jul-2017	5	Updated cover image, features and description.
05-Sep-2018	6	Updated cover image, features and description.
25-Sep-2020	7	Updated cover page image, features and description. Updated Section 1.3 How does STM32 ODE function pack complement STM32Cube?.
02-Nov-2020	8	Updated title.